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ABSTRACT

This paper uses a discrete-time multivariate hazard model and longitudinal data from the Survey of Income and Program Participation to examine how events affect poverty entries and exits and how these events have changed over time--from the pre-welfare reform period to the post-reform period. It also uses monthly state unemployment rate data from the U.S. Department of Labor and quarterly real gross domestic product data from the Department of Commerce. Results find no single path into or out of poverty. Changes in household composition, disability status, and especially labor supply are important events for entering and exiting poverty. A comparison of the 1988-1992 and 1996-1999 time periods shows both similarities and differences. Changes in employment are more important in the recent 1996-1999 time period, after federal welfare reform and during a booming economy, than in the 1988-1992 time period, prior to welfare reform. In addition, shifts from two-adult to female-headed households and vice versa, measured while controlling for shifts in employment, became less important in poverty transitions over this time period. (SM)

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Events that Trigger Poverty Entries and Exits

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Abstract:

Poverty rates hit near record highs in 1993 and have fallen to near record lows in 2000. What events triggered entries into poverty in the early 1990s and exits from poverty in the late 1990s? Understanding why individuals enter and exit poverty is necessary for effective policy, yet little is known about the events associated with poverty. Several researchers have examined the relationship between events and poverty transitions, but most use only descriptive analyses making it impossible to identify the relative importance of the different events in poverty transitions. This paper uses a discrete-time multivariate hazard model and longitudinal data from the Survey of Income and Program Participation (SIPP) to examine how events affect poverty entries and exits and how these events have changed over time—from the pre-welfare reform period to the post-reform period.

We find that there is no single path in or out of poverty. Changes in household composition, disability status, and especially labor supply are important events for entering and exiting poverty. A comparison of the 1988-92 and 1996-99 time periods shows both similarities and differences. One interesting difference is that changes in employment are more important in the recent 1996 to 1999 time period—after federal welfare reform and during a booming economy—than in the 1988 to 1992 time period—prior to welfare reform. In addition, shifts from two-adult to female-headed households and vice versa—measured while controlling for shifts in employment—became less important in poverty transitions over this time period.

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Events that Trigger Poverty Entries and Exits

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I. Introduction

The poverty rate has fallen from over 15 percent in 1993—one of its highest levels in three decades, to 11.3 percent in 2000—its lowest level in two decades.[1] But even at this low, one in 10 people were in poverty, including one in six children. These statistics, and the more recent increase in poverty, show that poverty remains a problem in the United States. What events triggered entries into and exits from poverty during the last decade? What role do events such as changes in household composition, employment status, and disability status play in entries into and exits from poverty? Understanding why individuals enter and exit poverty may be useful for effective policy, yet little is known about the events associated with poverty.

Several researchers have examined the relationship between events and poverty transitions, though most studies use only descriptive analyses. While informative, descriptive analyses provide limited information because individuals can experience more than one event at a time, thereby making it impossible to disentangle the relationship between one event and a poverty transition from that of other events or demographic characteristics. This study adds to our understanding of the role events play in entries into and exits from poverty by using a multivariate framework, which disentangles the relationship between different events and poverty transitions.

This study sheds light on two questions that remain largely unanswered in the poverty literature:

1. What events increase the likelihood of entering and exiting poverty? Do changes in household composition, employment status, disability status, or economic status play a role?
2. Have these events changed over time—from the late 1980s to the late 1990s?

We answer the questions using monthly, longitudinal data from the 1988, 1990, and 1996 panels of the Survey of Income and Program Participation (SIPP). The 1988 and 1990 panels provide information for 1988 through mid-1992 and the 1996 panel from 1996 through early 2000. The monthly data bring the benefit of close timing in measures between events and changes in poverty status. The three panels allow us to examine poverty events before and after the 1996 federal welfare reform.

Results based on our descriptive analyses of poverty entries and exits show that shifts in household structure (i.e., transitions from a two-adult to a female-headed household and vice versa) are relatively rare events in the population, but individuals who experience these events are the most likely to enter into or out of poverty. While individuals who experience employment shifts are somewhat less likely to experience a poverty transition (than those with a

[1] Individual poverty rates from the U.S. Census Bureau (2000).

household structure shift), shifts in employment are more common events in the population at large, and so are associated with a larger share of transitions into and out of poverty. Controlling for demographic and economic factors in the multivariate analyses, we find the likelihood of entering or exiting poverty to be highest for persons living in households with employment changes.

This paper is organized as follows. In Section II we discuss the prior research and our contribution to the literature. In Sections III we present the conceptual and empirical models. Section IV describes the data, and a discussion of the results follows in Section V. Finally, Section VI concludes.

II. Prior Research and Contributions

A review of the poverty transitions literature finds two broad questions that have been examined: (1) What are the *probabilities* associated with entries into, exits from, and reentries into poverty? and (2) What are the *events* associated with entries into and exits from poverty? (Table A.1.) The first question has been addressed by numerous studies, most thoroughly in a recent study by Stevens (1999). The second question has not been fully addressed in the literature and is the focus of this study. Below we review the poverty measures, data, methods, and findings from the poverty transitions literature, focusing especially on methods and results pertaining to events associated with poverty entries and exits. As the poverty literature is large, we narrowly focus on the U.S. poverty transitions literature and do not review related literatures such as those on poverty transitions in developing countries, poverty duration, or transition events in the dynamics of such programs as welfare and food stamps.

Measuring poverty: Most researchers studying poverty in the United States use the official poverty measure. Developed during the 1960s, the official measure compares families' resources, defined as annual before-tax money income, with official poverty thresholds to determine whether or not a family is poor. Thresholds were originally devised based on expenditures for minimally acceptable amounts of food times a multiplier for all other expenses. The thresholds vary by family size and composition and are adjusted annually based on changes in the consumer price index. If a family's resources (including all cash transfers and income, but excluding in-kind transfers and taxes) fall below the poverty threshold, the family members are considered poor (Citro and Michael 1995).

We measure transitions into and out of poverty using the official poverty measure. While we recognize several shortcomings associated with the official poverty measure,[2] we use it for

[2] Shortcomings of the official poverty rate are documented in Sen (1976), Ruggles (1990), Blank (1991), Schiller (1994), Ravallion (1996), and Burtless et al. (2000). Many of these concerns are reflected in the comments and recommendations of the National Academy of Sciences (NAS) Panel on Poverty and Family Assistance (Citro and Michael 1995).

three reasons. First, it is the most commonly used measure of poverty in transitions research. Second, it offers an easily implemented, straightforward method for measuring the economic status of individuals. Third, and most importantly, the aim of this study is to understand the official poverty rate in the United States and the events that affect transitions into and out of this "official poverty state."

Data: Different data sets lend themselves to different poverty measures and types of analyses. Cross-sectional data, such as the March Current Population Survey (CPS), can provide point-in-time poverty rate estimates, but are not well-suited for studies of poverty transitions. Longitudinal data, such as the Panel Study of Income Dynamics (PSID), the Survey of Income and Program Participation (SIPP), and the National Longitudinal Survey of Youth (NLSY), provide much more detailed information on income and family composition over time and are well-suited to analyzing poverty transitions.

Most researchers have used the Panel Study of Income Dynamics (PSID) to analyze poverty transitions (Bane and Ellwood 1986, Duncan and Rogers 1988, Iceland 1997a, Stevens 1994, Stevens 1999, Rank and Hirschl 1999a, Rank and Hirschl 1999b). The Survey of Income and Program Participation (SIPP) has been used less extensively in poverty research, though several researchers have examined poverty with SIPP data. Ruggles and Williams (1987) use the 1984 panel, Eller (1996) the 1991 and 1992 panels, Naifeh (1998) the 1993 panel, and Zick and Holden (2000) use the 1990, 1991, and 1992 panels. Gottschalk and Danziger (1993) use the CPS. The PSID provides benefits of over 25 years of longitudinal data, but with annual income measures. The SIPP provides benefits of monthly income measures, but with a shorter two to four year panel. These monthly data permit a more refined and accurate picture of the order of events. The NLSY is limited to individuals who were ages 14 to 21 in 1978, so is less useful in gauging poverty rates across the U.S. population.

Methods used to examine events associated with entries into and exits from poverty: Two analytical methods have been used to examine events associated with entries into and exits from poverty. Descriptive analyses that count the proportion of individuals who experience a poverty-related event and whether or not they enter or exit poverty (or vice versa) are used by Ruggles and Williams (1987), Duncan and Rodgers (1988), and Blank (1997). Duncan and Rodgers also measure the net change in poverty rates for individuals who experience an event. Bane and Ellwood and Blank identify the *primary* event most likely associated with poverty transitions. This approach allows for only one (primary) reason for a change in the family's poverty situation, when in fact there may be several reasons. Extending this research with multivariate analysis will relate multiple factors to changes in the family's poverty situation and would help identify the relative importance of each factor in beginning or ending the poverty spell. Iceland (1997b) uses a multivariate hazard rate model to study poverty exits, although his analysis does not examine individual- and family-level events, but rather labor market conditions such as

changes in the employment-to-population ratio, manufacturing employment, and service employment, as well as changes in residential segregation and welfare payments.

Results for events associated with entries into poverty: Descriptive analyses by Bane and Ellwood (1986), Ruggles and Williams (1987), and Blank (1997), who study all individuals, and Duncan and Rodgers (1988), who study children, find similar results concerning events associated with transitions into poverty. These analyses find that changes in employment and earnings are more commonly associated with poverty entries than changes in household structure and composition. Ruggles and Williams find that of the people who enter poverty, 40 percent live in a household that experienced a job loss by the head, spouse, or other household member (p. 13). Bane and Ellwood find that almost half (49.3 percent) of poverty spells begin when the household experiences a decline in earnings: 37.9 percent of poverty entries coincide with a fall in heads' earnings and 11.4 percent of entries coincide with a fall in wives' or other family members' earnings (pp. 14-15). Blank also finds that a large share of poverty entries (42.8 percent) occur with a fall in heads' earnings (p. 26). Other events experienced by persons who enter poverty include transitions to female headship, young adults set up their own household, and child born into the household (Bane and Ellwood and Blank). Bane and Ellwood, for example, find that the percentage of poverty spells that begin with these events are 11.1 percent, 14.7 percent, and 8.6 percent, respectively (p.13-14). Contrary to the results for all individuals, shifting to a female-headed household is more often associated with poverty entry than changes in earnings for the sub-population of female-headed households with children (Bane and Ellwood p. 13-14).

Duncan and Rodgers (1988) find that the labor supply of individuals in the household other than the mother or father is the event that coincides most with *children's* transitions into poverty. Fewer work hours of the male head, as well as unemployment of the male head, also coincides with children's poverty entries. Shifting into a single-parent family and having a head who becomes disabled are somewhat less important than these labor supply measures.

Results for events associated with exits from poverty: Similar to events associated with poverty entry, descriptive analyses using both the SIPP and PSID find that changes in labor supply and earnings are more commonly associated with poverty exits than changes in household structure and composition. Using the SIPP, Ruggles and Williams (1987) find that almost 47 percent of those leaving poverty had a family member gain a job, while the various household structure changes (including marriage) were experienced by less than one percent of those households leaving poverty. Using the PSID, Bane and Ellwood (1986) find that nearly three-quarters (73.2 percent) of poverty spells end with a rise in earnings: 50.2 percent with a rise in the head's earnings and 23.0 percent with a rise in a wife's or other household members' earnings. Transitions from a female-headed household to a male-headed household were experienced by 10.1 percent of individuals who exited poverty (p. 19). Examining female-headed households separately from male-headed households, Bane and Ellwood show that

changes in household structure are quite important for this subset of the population, though not more important than earnings. For example, they find that 26.4 percent of female-headed households with children exit poverty when they shift to a male-headed household and 51.4 percent exit because head or others' earnings rose (p. 19).

Again, Duncan and Rodgers (1988) find that children's transitions out of poverty most often coincide with changes in labor supply. Moving from a one-parent to a two-parent family is also associated with transitions out of poverty, although gaining a parent is more important for transitions out of poverty for blacks than nonblacks (Duncan and Rodgers). Iceland (1997b) uses a multivariate framework to examine "the effect of four structural characteristics on individual poverty exits: (1) economic restructuring, (2) skills mismatches, (3) racial residential segregation, and (4) welfare benefit levels. Results show that these factors play a role in explaining African-Americans' economic disadvantages, but they have a weaker and often contrary impact on whites' poverty exit" (p. 429).

Contributions to literature: We add to the literature by using a multivariate framework to examine how events such as changes in household structure, disability status, and employment status affect poverty entries and exits. This multivariate approach allows us to disentangle the relationship between one event and a poverty transition from that of other events or demographic characteristics. We further add to the literature by examining whether the events that trigger poverty entries and exits have changed over time, from the late 1980s to the late 1990s, periods before and after the federal welfare reform.

Finally, we add to the literature by using SIPP monthly data. Very few studies of poverty dynamics have used the SIPP, and the studies that have used the SIPP are limited in scope. The monthly data allow us to measure poverty using a monthly accounting period. Monthly data allow more closely timed measures between events and changes in poverty status than annual data. As Ruggles and Williams (1987) point out, associating an annual change in poverty status with an event that occurs at some point during the year is more difficult than associating a monthly change in poverty status with an event that occurred in the same or prior month(s).

III. Model

Conceptual Framework

A change in poverty status can result from a change in household earned income, household unearned income, or household size, the three components of poverty. Our hypotheses of the events likely to affect poverty entries and exits are based on the human capital

theory and Becker's (1991) theory of the demand for children.[3] These two theories identify major determinants of household earnings and household size.

Human capital theory is a theory of earnings, one of the major determinants of poverty. First developed by Becker and Mincer, this theory explains both individuals' decisions to invest in human capital (education and training) and the pattern of individuals' lifetime earnings. In general, the pattern of earnings are such that they start out low (when the individual is young) and increase with age (Becker 1975, p. 43), although earnings tend to fall somewhat as individuals near retirement.[4,5] Becker's (1991) theory of the demand for children predicts that the number of children in a family will depend on family income and the costs of children. Below we discuss the three components of poverty—earned income, unearned income, household size.

1. Determinants of Household Earned Income

Household earned income is directly determined by the total number of hours household members worked in the wage labor market and the wage rate.

Determinants of hours worked in wage labor market: Total household hours worked in the wage labor are determined by wages, unearned income, number of adults in the household, number of children in the household, age of the children and adults in the household, household members' health or disability status, state of the economy, and household preferences.

Higher wages have two offsetting effects on hours worked. On the one hand, higher wages increase hours because the cost of leisure and home production increases (a substitution effect). On the other hand, higher wages decrease hours worked because individuals do not need to work as many hours to reach a particular level of income (an income effect). Higher unearned

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[3] Sawhill (1988) concludes in her survey of the poverty persistence literature that the literature lacks "a widely accepted theory of income distribution that might help one choose between competing model specifications and their varying results" (p. 1112). A review of the literature indicates this is still the case. The literature provides many poverty statistics and some empirical results, but little theory to explain them. Perhaps this is because a theory of poverty is complex to model. As Duncan (1984) notes, a complete explanation of why people are poor would require many interrelated theories—theories of family composition, earnings, asset accumulation, and transfer programs, to name a few.

[4] Empirical work tends to support the human capital theory. Willis (1986), in his survey of human capital earnings functions, concludes the theory has been "repeatedly confirmed with data from around the world" (p. 598). Also, using the PSID, Duncan (1984) finds "a fair amount of evidence supporting the human capital model" (p. 124).

[5] Other theories relevant to poverty analysis are the permanent income and life-cycle hypotheses—associated primarily with Nobel prize winners Modigliani and Friedman. These theories highlight the important role of unearned income and future earned income, as well as current income (Dornbusch and Fischer 1990). An advantage of the permanent income and life-cycle hypotheses, over the human capital theory, is that they incorporate both earned and unearned income. However, the theories are difficult to adapt to poverty (Bane and Ellwood 1986) and results from the empirical models based on them do not reproduce observed patterns of poverty persistence as well as other methods (Stevens 1999). In addition, the permanent income hypothesis does not allow for an individual's income stream to change if, for example, they become disabled. This is a serious drawback for analyzing poverty transitions where one of the primary aims is to analyze the effect of events—such as a change in disability or marital status—on poverty.

income has only one effect and is expected to lower household hours spent in the wage labor market (an income effect). Additional unearned income means household members can spend less time in the wage labor market and consume the same amount of goods. Additional adults in the household should increase household hours spent in the wage labor market by providing another potential wage earner and additional help with home production. The number of children in the household is expected to reduce hours spent in the wage labor market, due to the need for additional time spent caring for the child. This is particularly true for households with young children.

Human capital theory suggests that household labor should also vary with age. As described above, young adults are more likely to invest in human capital and so spend less time in the wage labor market, working-age adults will spend more hours as they reap the benefits of their investments, and adults nearing retirement age will spend fewer hours. To the extent that poverty follows earnings, we might predict a similar relationship between age and poverty, with poverty more likely for the young and elderly. Household members' health status will affect hours worked if a household member misses work due to illness or is unable to work due to a disability. The economy captures demand side effects of the labor market, such as whether part-time, full-time, or over-time jobs are available. Household preferences such as taste for work, taste for government transfers (as it affects unearned income), and the value put on home production will also affect the amount of time household members spend in the wage labor market.

Determinants of wages: The wage rate is another important determinant of household earned income. The wage available to individuals in a household will depend primarily on their human capital, age, gender, race, the state of the economy, and government policies. Human capital theory predicts that individuals with higher levels of education and training will have higher wages. It also predicts wages will be affected by age, where young and older individuals are expected to have lower wage rates. Gender may affect wage rates to the extent that women have taken time out of the labor market to rear children and there is discrimination in labor market. Similarly, we may see differences in wage rates by race to the extent that discrimination exists in the labor market or to the extent that our measure of educational attainment does not capture the level of human capital (since school quality differs substantially across the country and minorities are more likely than non-minorities to attend low quality schools). The economy will affect wage rates—a strong economy and high demand for workers will result in higher wages. Finally, government policy such as the minimum wage may also affect wages.

As an individual's earnings are simply the product of his/her labor market hours and wage, and a household's earned income is the sum of all individual earnings within a household, the determinants of a household's earnings will be all the determinants of household wage labor hours and household members' wages.

2. Determinants of Household Unearned Income

Household unearned income is the sum of government transfers, private transfers, and asset income. The amount of government and private transfers a household receives is in part a function of preferences. All else equal, families with little taste for receiving transfers will have less unearned income from either government or private transfers than their counterparts who have more of a taste for transfers. The economy may also play a role in altering household unearned income as returns on investments will affect asset income.

3. Determinants of Household Size

Household size is an important determinant of whether a household or individual is in poverty because the official poverty measure incorporates household size. Based on Becker's theory of the demand for children, household size depends on household income, the cost of children, wages, government transfers, and preferences. Income plays a role in determining family size because families with higher incomes are more able to afford additional children. In terms of the cost of children, direct costs associated with having children include, among others, food, clothing, and health-care expenses. In addition to these direct costs there is also the *relative* cost. The relative cost of having a child is affected by the opportunity cost of child rearing as measured by the female wage, to a lesser extent the male wage, and government transfers. Government transfers may affect the number of children and adults in a family by altering the relative cost of having a child and creating incentives or disincentives to marry. Finally, individual preferences will affect family size.

Putting It All Together—the Underlying Determinants of Poverty

Combining the determinants of household earned income, unearned income, and size, we arrive at the determinants of poverty. Whether a household is in poverty is determined by:

> Poverty = P{health or disability status of household members, age of adults, race/ethnicity of adults, human capital (education and on-the-job training level) of working age adults, gender of adults, number of adults, number of children, age of the children, cost of children, government policies, state of the economy, and household preferences}.

These variables form the basis for the empirical model which examines the relationship between household poverty status, household characteristics, and the events that households experience. We now turn to examine the events that may affect families' poverty status.

Events Hypothesized to Affect Poverty

The conceptual model identifies the types of events that might be associated with entries into and exits from poverty:

- Changes in household composition

- the birth of a child—through its negative effect on wage labor hours and its effect on household size,
- a change in marital status—through its effect on wage labor hours;

- Change in employment status—through its effect on earnings;
- Changes in disability or health status—through their effect on wages or wage labor hours;
- Changes in educational attainment—through their effect on the wage;
- Changes in government policies—through their effect on earned income, unearned income, and household size; and
- Changes in economic conditions—through their effect on the hours household members can choose to work (e.g., job loss) and wages

Empirical Model

We use a discrete-time multivariate hazard model to analyze events that trigger entries into and exits from poverty. A hazard model simply provides information about the probability of experiencing an event at time t (e.g., exiting poverty) *given* that the event has not occurred prior to time t (e.g., the person is in poverty in the period prior to t, $t-1$). Our multivariate hazard model allows the probability of experiencing an event at time t (e.g., exiting poverty) to depend on a set of explanatory variables, which includes among other characteristics, age, race, gender, and educational attainment, as well as the trigger events. This multivariate framework allows us to determine the relative importance of multiple events in poverty transitions, something that cannot be learned from a descriptive analysis. Separate poverty entry and exit equations are estimated.

Our discrete-time hazard model assumes that the probability of entering (or exiting) poverty in a given month is represented by a logit specification.[6] The logit specification is very tractable and restricts the transition probabilities to lie between zero and one (Allison 1984). Several studies of poverty dynamics have used the logit specification (Stevens 1994 and 1999, Iceland 1997b). With this assumption, the probability of entering (or exiting) poverty for person i at time t can be written as:

$$P_{it} = \frac{1}{1+e^{-y_{it}}} \qquad [1]$$

where

$$y_{it} = \alpha_t + \delta' T_{it} + \beta' X_{it}. \qquad [2]$$

[6] We use a discrete-time, not a continuous-time, multivariate hazard model because poverty transitions are observed in a discrete time period, a month.

In this model, the vector T represents transition events, the primary focus of this analysis, and the vector X represents control variables.[7] Our model of *poverty entries* includes the following transition events: (1) child under age six enters household, (2) two-adult household becomes female-headed household,[8] (3) loss of employment (of head, spouse, and other household members)—measured as a change from with job to no job, (4) nondisabled household head becomes disabled, and (6) weakening economy (change in state unemployment rate and change in GDP).

Our model of *poverty exits* include similar, although slightly different transition events: (1) female-headed household becomes two-adult household, (2) gain in employment (of head, spouse, and other household members)—measured as a change from no job to with job, (3) disabled household head becomes nondisabled, (4) household head receives high school degree, (5) household head receives advanced degree (associates degree or higher), and (6) strengthening economy (change in state unemployment rate and change in GDP). Because some of these events are choice variables (and thus potentially endogenous), this model does not necessarily identify causal relationships. Instead, it measures conditional relationships—the relationship after controlling for other events and characteristics.

An important issue is the extent to which events that occur in earlier periods are allowed to affect transitions in the current period. That is, to what extent lags enter the model. An immediate fall in income, say due to the loss of a job, may not cause a household to instantly fall below the poverty threshold if it is eligible for unemployment insurance. A household may fall below the poverty threshold only when unemployment insurance benefits run out. Based on this theory of the timing between events and a poverty transition, we allow lags to enter the model for up to one year. We include the event at time (month) t and four quarterly lags.

Control variables include characteristics of the household head (age, race, and educational attainment), household (female-headed household, number of adults 18-61, number of children), geographic characteristics (region and MSA), economic indicators (state unemployment rate and GDP), poverty spell information (observed duration of current spell at time t, observed number of prior spells, left censored spell identifier), and year identifiers.

Control variables that are tied to the event variables, such as female-headed household, are defined so that the event variable captures the full effect of the event. Using female-headed household as an example, three categories are created such that the first category captures the event at time t, the second category captures the lagged events (at time $t-1$ through $t-4$, or one year), and the third category captures the control (or level) variable: (1) female-headed

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[7] Some individuals enter (or exit) poverty more than once, so are included in the model more than once. Our standard errors are adjusted for this.

[8] See discussion of control variables that are tied to event variables below for additional information on how this event is measured relative to other household combinations.

household at time *t* and became female-headed at *t* (i.e., in the last month); (2) female-headed household at time *t* and became female-headed at *t-1* through *t-4* (i.e., in the last four quarters/year); and (3) female-headed household at time *t* and became female-headed *prior* to time *t-4* (i.e., more than one year ago). This third group (female-headed household at time *t* and became female-headed *prior* to time *t-4*) provides information about how living in a female-headed household for more than one year affects the probability of entering and exiting poverty relative to living in a two-adult or single male-headed household. In this example, two-adult and single male-headed household at time *t* is the omitted group. The following five control variables are defined with their interaction with the event variable in mind: (1) female-headed household for more than one year; (2) number of adults 18-61 in the household, less the head and wife; (3) number of children in the household less those who enter in the past year (i.e. at time *t* through *t-4)*; (4) household head graduated from high school more than one year ago; and (5) household head received an associates degree or higher more than one year ago.[9]

Left and right censoring: How to handle poverty spells that are censored at the beginning of the sample period (left-censored spells) or the end of the sample period (right-censored spells) is an important methodological issue. Our proposed multivariate hazard estimation approach takes account of right-censored spells, while left-censored spells are more problematic. Whether including or excluding left-censored spells in an analysis produces biased results depends on whether the analysis is trying to answer questions regarding poverty transitions or poverty duration. Iceland (1997a) looks at this exact topic in his paper "The Dynamics of Poverty Spells and Issues of Left-Censoring." He recommends that "when studying poverty *transitions*, using discrete-time logistic regression," as we do in this paper, "all observations from left-censored spells should be included in [the] model to avoid selection bias." Iceland finds that omitting left-censored cases potentially introduces greater bias in poverty transitions than including them because it would systematically exclude individuals in the midst of long-term poverty.[10] As our analysis focuses on poverty transitions, we incorporate left-censored spells. We do, however, identify left-censored spells in the model using a dummy variable. With this design, the model of poverty entries that includes left-censored spells, for example, examines "first observed poverty entry" not "first entry."

Interpreting coefficients from the model: The value of the estimated coefficients from the discrete-time multivariate hazard models do not have a straightforward interpretation. But, we use the estimated coefficients and individuals' own characteristics to calculate the change in the probability of entering poverty (or exiting poverty) when an event occurs. We calculate how the likelihood of entering/exiting poverty changes when the event occurs by calculating (1) the

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[9] Changes in educational attainment are events only in the poverty exit model, so these last two variables pertain only to the exit model.

[10] Stevens (1999) is also concerned about bias from omitting left-censored spells from her examination of demographic characteristics (i.e., not transition events) associated poverty exit and reentry. She finds the bias from omitting left-censored spells from her exit and reentry probabilities is extremely small (p. 572).

average of each individual's likelihood of entering poverty *when the event is assumed to occur*,[11] (2) the average of each individual's likelihood of entering poverty when the event *does not* occur, and (3) the difference between these two average probabilities, where this difference provides an estimate of how the probability of entering/exiting poverty changes when an event occurs.

IV. Data

Our analysis uses data from the 1988, 1990, and 1996 panels of the Survey of Income and Program Participation (SIPP). We supplement these data with monthly state unemployment rates (not seasonally adjusted) from the U.S. Department of Labor (2001) and quarterly real gross domestic product (GDP) from the U.S. Department of Commerce (2001).

Each panel of the SIPP is a nationally representative (non-institutional) sample of households whose members are interviewed at four-month intervals over approximately a two- to four-year period. The sample sizes for each panel range from 14,000 to 36,700 households. At each interview, data are collected on income for each of the preceding four months.

We analyze the 1988, 1990, and 1996 SIPP panels. The 1988 panel interviews households from February 1988 through January 1990, enabling us to analyze poverty dynamics prior to welfare reform and during a strong economy.[12] The 1990 SIPP panel interviews households from February 1990 through September 1992, and brings the benefits of capturing poverty dynamics prior to welfare reform, during a weak economy—including the July 1990 to March 1991 recession (NBER 2001), and during a period of dramatic increases in the annual family poverty rate (from 10.7 percent in 1990 to 11.5 percent in 1991 and 11.9 percent in 1992).[13] The 1996 SIPP panel is the most recently available and interviews households from April 1996 through March 2000, allowing us to capture poverty dynamics post-welfare reform and during a strong economy.[14]

The unit of analysis for defining poverty status is the SIPP household, not the SIPP family. A SIPP household consists of all persons who occupy a housing unit (including all unrelated persons), whereas a SIPP family is a group of two or more persons related by birth,

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[11] For the poverty entry models, the probability individual i enters poverty at time t is expressed as $P_{it} = \frac{1}{1+e^{-y_{it}}}$, where $y_{it} = \alpha_t + \delta' T_{it} + \beta' X_{it}$ and X_i and T_i represent individual i's own characteristics (see Equations 1 and 2). When calculating the estimated probability of entering poverty when an event is assumed to occur, individual's own characteristics are used except for the one transition event that is assumed to occur (i.e., the event indicator variable is set to one).

[12] The economy was expanding from November 1982 to July 1990 (NBER 2001).

[13] US Census Bureau 2000.

[14] Due to the large size of the 1996 SIPP person-month entry sample, we limit the sample to the 1997-2000 time period (dropping observations for 1996 and the first quarter of 1997).

marriage, or adoption who reside together. There are two main reasons for choosing the SIPP household over the SIPP family: (1) the SIPP household will provide us with a better understanding of the economic status of single parents, because it includes the income of a cohabiting partner; and (2) the SIPP household includes single-person households, whereas the SIPP family excludes them. A downside of choosing the SIPP household, rather than the SIPP family, to define poverty is that the SIPP household deviates from the "official poverty" definition, which is based on families.[15] While there are drawbacks to using the household rather than the family in the SIPP, we think the benefits of using the household outweigh the drawbacks.

A primary strength of the SIPP lies in its monthly data on income and household composition. These monthly data allow for detailed analyses of short poverty spells and the events that cause them. As mentioned, associating annual poverty changes with specific events that occurred at some point in a year can be difficult, because the event and poverty change may actually have taken place at very different points in time and may not be causally related. Many poverty transitions may be missed in annual data (Ruggles and Williams 1987). The SIPP also does a better job of capturing the current Hispanic and immigrant populations than other longitudinal data sets, such as the PSID. These populations may be particularly important in measuring poverty. Still, in contrast to the long panel length of the PSID, the SIPP can only track households for two to four years, making it impossible to examine long poverty spells.

The longitudinal nature of the SIPP creates a concern of attrition bias. Research suggests that poorer persons are more likely to leave the SIPP sample prior to the end of the panel (Citro and Michael 1995, pp. 414-15). However, even with this limitation, the NAS Panel recommends that the SIPP replace the March CPS to become the official source of U.S. poverty statistics (Citro and Michael 1995, p. 391).

The monthly SIPP data make it possible to measure monthly poverty rates, but researchers must make some adjustments to the annual poverty thresholds to create a monthly poverty measure. Eller (1996) and Naifeh (1998) adjust poverty thresholds each month according to changes in the consumer price index.[16] Ruggles (1990), using the 1984 SIPP panel, divides the government's annual poverty thresholds by twelve and compares it to income each month. We adopt the approach used by Ruggles.

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[15] The National Research Council recommends that the official poverty measure continue to use families and unrelated individuals as the unit of analysis, but that the definition of "family" be broadened to include cohabiting couples (Citro and Michael 1995, p. 13).

[16] Eller and Naifeh also examine *annual* poverty with the SIPP. They both calculate annual poverty by summing the family's monthly income over the entire year and comparing it to the sum of the family's monthly poverty thresholds. An advantage of this calculation is that it can account for changes in family composition throughout the year.

Studies of welfare program dynamics (i.e., AFDC/TANF and food stamps) using SIPP data have been concerned with the "seam phenomenon"—transitions are more likely to occur between interview waves than months within the same wave—and have used wavely data rather than monthly data. Researchers using the SIPP to study poverty, however, have used monthly data (Ruggles 1990, Eller 1996, and Naifeh 1998). The seam phenomenon is of less concern when studying poverty status then program dynamics, as indicated by the NAS panel's recommendation that the SIPP be used to study poverty in part because of its monthly income data. To avoid capturing arbitrary one month changes in poverty, we smooth poverty in the SIPP so that a household must remain in or out of poverty for two months before we consider it a change in poverty status. Similarly, Eller (1996) avoids arbitrary changes in poverty by focusing on poverty spells of two months or more. Overall, using SIPP data allows us to examine poverty on a monthly basis and before and after the 1996 federal welfare reform.

V. Results

Descriptive Analysis

The SIPP sample is split into two separate samples: (1) persons at risk of entering poverty in the current period *t*, (i.e., persons not in poverty in the prior period *t-1)* and (2) persons at risk of exiting poverty in the current period *t* (i.e., persons in poverty in the prior period *t-1*). In this section we provide basic descriptive statistics for each of these samples and a description of the relationship between events and poverty transitions.

Events Associated with Poverty Entries

The combined 1988/1990 SIPP sample and 1996 SIPP sample each have over two million person-month observations and over 93,000 persons.[17] Examining the key trigger events, we find that changes in each of the events affect a small portion of the sample over the course of a year (0.1 to 1.2 percent, Table 1 columns 1 and 3). A loss of employment by a household member other than the head or wife is the most common event experienced by individuals in both SIPP panels (1.2 percent of the sample). This is followed by loss of employment by the wife and the onset of the disability in the 1988/90 SIPP panel (0.8 percent) and by loss of employment of the wife and employment loss of head in the 1996 SIPP panel (0.8 and 0.7 percent). Shifting from a two-adult to a female-headed household is a relatively rare event experienced by only 0.1 percent of the sample.

The descriptive results presented in Table 1 suggest that persons who experience these key trigger events in a given year are significantly more likely to enter poverty that year than the overall sample. For example, of those who have a child under age six enter the household in the

[17] Due to the large size of the 1996 SIPP person-month entry sample, we limit the sample to the 1997-1999 time period (dropping observations for 1996 and the first quarter of 1997).

1988/90 panel, 5.9 percent enter poverty as compared with 1.1 percent of the total sample (column 2). Persons who shift from living in a two-adult household to a female-headed household, a fairly rare event, are the most likely to enter poverty (27.9 and 20.1 percent in the 1988/90 and 1996 panels, respectively). Persons experiencing changes in employment are less likely to enter (6.5 to 19.2 percent) that those experiencing a shift from two-adult to female-headed, as are persons living in a household where the head becomes disabled (4.0 to 6.4 percent), or a young child enters the household (5.9 to 6.5 percent).

While those who shift to a female-headed household are the most likely to enter poverty, this event does not explain why most people are poor, because only a small fraction of the population experiences this event. Employment loss is a far more likely explanation. In descriptive analyses of those entering poverty (not shown here), we see that employment is indeed the most common event associated with poverty entry. Twenty percent of those entering poverty had a household member lose a job. A change in disability status plays the next largest role (3.1 percent of those entering poverty), followed by a shift to a female-headed household (2.8 percent) and a young child entering the household (2.5 percent).

Events Associated with Poverty Exits

Of the person-month observations at risk of exiting poverty each month, 10.9 percent exit poverty in the 1988/90 SIPP panel and 9.1 percent exit poverty in the 1996 SIPP panel (Table 2, columns 2 and 4). Changes in employment are the most common trigger events (1.1 to 2.9 percent, columns 1 and 3), followed by a change in disability status (0.4 to 0.8 percent), and a shift from a female-headed to a two-adult household and education gains (0.1 to 0.2 percent). Persons experiencing each of the key exit trigger events in a given year are significantly more likely to exit poverty that year than the overall sample. Similar to the findings for poverty entry, persons who shift from living in a female-headed to a two-adult household are the most likely to experience a poverty transition—51.9 to 65.2 percent exit poverty (columns 2 and 4). However, because relatively few people experience this event, it is less associated with poverty exits. Changes in employment are often associated with poverty exits in the total population.

V.2. Multivariate Analysis

The general findings from the multivariate analyses are similar for the poverty entry and poverty exit models.[18] The multivariate analyses confirm that many events are related to the likelihood of entering and exiting poverty including changes in household composition, employment, and disability status. Of the trigger events examined, individuals living in households that experience an employment change are the most likely to enter and exit poverty. This finding differs from those in our descriptive analysis, as the descriptive results suggest that

[18] The results of this analysis with SIPP data are similar to results from analyses carried out with data from the 1975-97 waves of the Panel Study of Income Dynamics (PSID).

shifts in household structure are more important than changes in employment. Controlling for characteristics of the household—many of which are related to female headship including minority status and having low levels of education—reduces the observed relationship between household structure shifts and poverty, and employment changes emerge as most strongly related to poverty transitions. Our findings also suggest that many of the household, geographic, and economic characteristics are significantly related to poverty transitions, as well as the poverty and non-poverty spell information. Below we discuss the findings from the poverty entry analysis, and then turn to the poverty exit analysis. While much of the discussion focuses on models that include employment changes, we also discuss results from models that exclude employment changes.

Poverty Entries

Both the 1988/90 and 1996 SIPP panel results suggest that individuals experiencing many of the trigger events are significantly more likely to enter poverty (Table 3). We first discuss our findings related to the trigger events for the 1996 SIPP panel, and then compare them with findings from 1988-90 SIPP panels. We then discuss the non-trigger event/control variables for both panels.

Poverty Entries: Trigger Events

The 1996 SIPP results identify employment losses as the event most often associated with poverty entries (Table 3, column 2). The next most important event is the entry of a child under age six into the household, followed by the onset of a disability of the household head and then a shift in household structure.

Loss of employment by the household head has the largest impact on poverty entry. Persons in households where the head stops working in the current month (at time *t)* or in the prior two quarters (at time *t-1* or *t-2*) are more likely to enter poverty in the current month. Our finding that the loss of employment in earlier months is related to poverty entries in the current month suggests that some household are able to keep themselves out of poverty in the short-term, perhaps because of government transfers such as unemployment insurance benefits. The likelihood of entering poverty is higher by a *total* of 12.3 percentage points for individuals living in a household where the household head stops working. If the household head stops working this month, the probability of entering poverty is higher by 11.1 percentage points, and if the household head stopped working at time *t-1, t-2,* or *t-3* the probability of entering poverty differs by 1.1 percentage points, 0.3 percentage points, and -0.2 percentage points, respectively. Summing these estimated effects gives the total effect of 12.3 percentage points.[19]

[19] The estimated effects (the third number presented in the tables) are summed across the time periods where the coefficients are statistically significant at the five percent level. The effects for other variables are calculated in this same way.

Losses of employment by the spouse and other family members have smaller, yet significant, effects: 6.0 percentage points for the spouse and 5.3 percentage points for others in the household. Having a child under age six enter the household increases the likelihood of entering poverty by 3.8 percentage points. The second household composition trigger event has a substantially smaller relationship with poverty entries. Shifting from a two-adult to a female-headed household increases the likelihood of entering poverty by only 1.3 percentage points. Changes in economic conditions—changes in state unemployment rates and GDP—have only a slight influence on poverty entries, but the results do suggest that the level of the state unemployment rate is significantly related to poverty entries.[20] Individuals living in states with a high unemployment rate are more likely to enter poverty.

Changes Over Time: The SIPP results suggest that over the 1988-92 (i.e., 1988/1990 SIPP panels) to 1997-99 (i.e., 1996 SIPP panel) time period, shifts from two-adult to female-headed households—measured while controlling for shifts in employment—became less important in poverty entries (Table 3, columns 1 and 2).[21] Shifting from a two-adult to a female-headed household is important in the both periods, but is found to increase the likelihood of entering poverty by 8.9 percentage points in the 1988-92 period and only 1.3 percentage points in the 1997-99 period. Because changes in household structure are often associated with changes in employment, we estimated a second set of models that exclude employment changes (not shown). The results from these models show a similar relationship between poverty entries and household structure shifts in the 1988-92 and 1997-99 periods. One possible explanation for this pattern is that in the latter period changes in household structure are operating through employment to a greater extent than in the earlier period.

Our analysis also suggests that the loss of employment became more important in poverty entries over this time period, particularly the employment of the spouse and other household members. For example, the loss of employment by the spouse increased the likelihood of entering poverty by 1.1 percentage points in the 1988-92 period, while the same employment loss increased the likelihood of entering poverty by 6.0 percentage points in the 1997-99 period.

We find that the relationship between a disability onset and a poverty entry is smaller in magnitude in the 1988-92 versus 1997-99 period. The onset of a disability increases the likelihood of entering poverty by 0.3 percentage points in the 1988-92 period and 2.0 percentage

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[20] We examine whether the estimated relationship between poverty entries and *changes* in economic conditions are mitigated by the inclusion of employment changes in the model. Our analysis suggests this is not the case. We estimate a second set of models that exclude the employment change variables, and compare results across models that include and exclude the employment change variables. We find little difference in the relationship between poverty entries and the economic change variables across the two models.

[21] Recall from the descriptive analysis section that the poverty entry models estimated with the 1996 SIPP panel do not use data from 1996 due to computer constraints encountered when estimating the models on nearly 3 million observations.

points in the 1997-99 period.[22] Finally, the increase in the likelihood of entering poverty if a child under age six enters the household is similar in the 1988-92 and 1997-99 periods—3.4 and 3.8 percentage points, respectively.

Poverty Entries: Non-Trigger Events/Control Variables

Many of the control variables in the 1988/90 and 1996 models also help to explain poverty entry. Characteristics of the household head including his/her age, race, and educational attainment are related to poverty entry. Persons in households headed by older adults (age 55 or older) are less likely to enter poverty, which is consistent with Naifeh (1998) who also uses SIPP data (p. 70-63). Consistent with analyses by Eller (1996), Naifeh (1998), and Rank and Hirschl (1999a and 1999b), persons who live in households headed by black individuals are more likely to enter poverty than persons who live in households headed by white individuals, as are persons in households headed by Hispanics. We also find that higher educational attainment of the household head is associated with a lower probability of entering poverty. Persons who live in households headed by individuals with more than a high school degree are the least likely to enter poverty, followed by persons in households where the head has a high school degree only, and finally, those in households headed by persons with no high school degree are the most likely to enter poverty.

Household structure also plays a role in poverty entries. Person in households that have been female-headed for two or more years are more likely to enter poverty than persons in two-adult and single male-headed (i.e., a male heads the household without a female partner) households.[23] The presence of dependent children in the household is also related to entries—the likelihood of entering poverty is higher for persons in households with more children. We also find that individuals who live in metropolitan areas are less likely to enter poverty, which may be due to the fact that there tends to be more employment opportunities in metropolitan areas as compared to non-metropolitan areas.

In terms of spell information, we find that the length of the non-poverty spell matters. The probability of entering poverty declines as we observe the individual out of poverty for more months. This pattern in the coefficients suggests that one of the following is taking place: (1) persons who have longer non-poverty spells are different from persons with shorter non-poverty spells in a way that the model does not capture (e.g., more disciplined and hard-working), and that this unobserved heterogeneity produces the pattern;[24] (2) there is duration dependence; or (3) a combination of the two. Because it is unlikely that our model captures all differences between

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[22] The relationship between disability onset and poverty entry is large in magnitude in models that exclude changes in employment status.

[23] Recall that the categories of headship capture all possible household structure combinations at time *t*: female-headed household at time *t* and became female-headed (a) in the last month (at *t*), (b) in the last year (at *t-1* through *t-4*), or (c) more than one year ago (prior to *t-4*), as well as two-adult single or male-headed household at time *t*.

[24] In other words, the coefficient is picking up unobserved heterogeneity.

individuals, it is unlikely that this series of coefficients is identifying a pure duration dependence effect. Having a prior (observed) non-poverty spell, which indicates that a poverty spell has occurred, increases one's probability of entering poverty (in the 1988/90 panel only). That is to say, persons who have previously experienced a poverty spell are more likely to enter poverty than persons who have never been in poverty. Finally, we find that individuals whose spell information is left-censored are less likely to enter poverty. This finding is not surprising as persons whose non-poverty spells are left-censored likely have a longer non-poverty spell than what is observed in the data.

Poverty Exits

Both the 1988/90 and 1996 SIPP panel results suggest that individuals experiencing many of the trigger events are significantly more likely to exit poverty (Table 4). The events included in the poverty exit models differ somewhat from those included in the poverty entry models. A shift in household structure—from a female-headed to a two-parent household—is the only family composition trigger event included in the poverty exit models.[25] Another difference is that the poverty exit models include increases in educational attainment as a trigger event. As with the poverty entry models, we first discuss our findings related to the trigger events for the 1996 SIPP panel, and then compare them with findings from 1988-90 SIPP panels. We then discuss the non-trigger event/control variables for both SIPP panels.

Poverty Exits: Trigger Events

Similar to the poverty entry model, individuals experiencing many of the trigger events are significantly more likely to exit poverty. Like our examination of poverty entries, the 1996 SIPP results suggest that employment gains are most often associated with exits from poverty. This differs from our descriptive results which identified shifts in household structure as more important than shifts in employment. We also find that increases in educational attainment—completing a high school or higher-level degree—is the next most important event, followed then by shifts in household structure, and then changes in disability status.

Employment gains by the head, spouse, and other household members are of roughly equal importance in helping individuals exit poverty. The likelihood of exiting poverty in a month is higher by a total of 28.3 percentage points if the head gains employment, 28.4 percentage points if the spouse gains employment, and 29.6 percentage points if another household member gains employment (Table 4, column 2).[26] Increases in educational attainment

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[25] The household composition variable that identifies whether a child under age six enters the household is excluded from the poverty exit models, as it is an event associated with poverty entries, not poverty exits.

[26] These percentages are calculated by summing the estimated effects (the third number presented in the tables) in the time periods where the coefficients are statistically significant at the five percent level. So, for the event "other household member gains employment" we sum the time t and $t-4$ effects. If another household member gains employment this month (t), the probability of exiting poverty this month (t) is higher by 24.0 percentage points (Table 4, column 2) and if another household member gained employment in the last quarter ($t-1$) the probability of

have a similarly large impact on the likelihood of exiting poverty. An individual's likelihood of exiting poverty is higher by a total of 27.0 percentage points if the household head receives an advanced degree (associate's degree or higher). If the household head receives a high school degree, the likelihood of exiting poverty is higher by a smaller, yet substantial 7.4 percentage points. This increased likelihood of exiting poverty upon completing a schooling degree may be due to the higher wages individuals generally command with higher levels of education, as well as increased hours of work which may coincide with the completion of school.

A shift in household structure, from a female-headed to a two-adult headed household, has the next largest effect, although this effect is considerably smaller—the likelihood of exiting poverty in a month is higher by only 4.8 percentage points. Individuals living in households whose head ceases to be disabled are also more likely to exit poverty (by 3.5 percentage points). The final events examined are changes in economic conditions. The results suggest that changes in the state unemployment rate do not affect the likelihood of exiting poverty, but that higher state unemployment rates (i.e., the level variable, not the change variable) lower the likelihood of exiting poverty.[27] We also find that an increase in GDP reduces the likelihood of exiting poverty, an unanticipated sign.

Changes Over Time: Similar to the SIPP poverty entry models, a comparison of the 1988/1990 and 1996 SIPP panel results show some differences. The results suggest that over the 1988-92 (i.e., 1988/1990 SIPP panel) to 1996-99 (i.e., 1996 SIPP panel) time period, shifts from female-headed to two-adult headed households—measured while controlling for shifts in employment—became less important in poverty exits. With a shift from a female-headed to a two-adult household, an individual's likelihood of exiting poverty in the 1988-92 period increased by 24.9 percentage points (Table 4, column 1),[28] whereas in the 1996-99 period it only increased by 4.8 percentage points (Table 4, column 2).

Since changes in household structure are often associated with changes in employment, we estimated a second set of models that exclude employment changes (not shown). Unlike the results with employment, the results from these models show a similar relationship between poverty exits and household structure shifts in the 1988-92 and 1996-99 periods. One possible explanation for this pattern is that in the latter period changes in household structure are operating indirectly through employment to a greater extent than in the earlier period. Our

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exiting poverty is higher by 5.6 percentage points (Table 4, column 2). These two pieces provide the total effect of 29.6 (24.0 plus 5.6) percentage points. The effects for other variables are calculated in this same way.

[27] We examine whether the estimated relationship between poverty exits and *changes* in economic conditions are mitigated by the inclusion of employment changes in the model. Our analysis suggests this is not the case. We estimate a second set of models that exclude the employment change variables, and compare results across models that include and exclude the employment change variables. We find little difference in the relationship between poverty exits and the economic change variables across the two models.

[28] The increase in the likelihood of exiting poverty by 24.9 percentage points is calculated by summing the effects in the three time periods that are statistically significant: *t* (35.1), *t-1* (-4.6) and *t-2* (- 5.6).

analysis also suggests that employment gains became more important in poverty exits over this time period. An employment gain by someone in the household increased the likelihood of exiting poverty by 18 to 22 percentage points in the 1988-92 period, while the same employment gain increased the likelihood of exiting poverty by roughly 28 percentage points in the 1996-99 period.

The results suggest that the effect of increases in educational attainment are similar across the two periods, and receiving an advanced degree (associate's degree or higher) is more important than receiving a high school degree. The relationship between economic conditions and poverty exits differs somewhat between the two time periods, although individuals who live in states with high unemployment rates are less likely to exit poverty in both periods. Unlike the 1996-99 period, changes in economic conditions are found to affect poverty exits in the 1988-92 period. The 1988-92 SIPP results suggest that increases in the unemployment rate reduced poverty exits and that increases in GDP increased poverty exits, both are the anticipated sign. The results suggest that an increase in the state unemployment rate by 0.5 percentage points decreases the likelihood of exiting poverty by 0.4 percentage points, and an increase in GDP of $25 billion (roughly the average change in GDP for the 1988/90 SIPP panels) increases the likelihood of exiting poverty by 0.8 percentage points.

Poverty Exits: Non-Trigger Events/Control Variables

Many of the model's control variables help to explain poverty exits. Characteristics of the head including his/her age, race, and educational attainment are related to poverty exits. In both SIPP analyses, we find that individuals in households headed by young adults (under age 25) and older adults (age 55 and or older) are less likely to exit poverty. Consistent with the literature, we find that persons living in households headed by black and Hispanic individuals are less likely to exit poverty than persons living in households headed by white individuals (Eller 1996, Naifeh 1998, and Stevens 1999). Like Stevens (1999), we find that higher educational attainment is associated with a higher probability of exiting poverty.

Household composition also plays a role in poverty exits. Persons in households that have been female-headed for one or more years are less likely to exit poverty than persons in two-adult and single male-headed households. The presence of dependent children in the household is also related to poverty exits—the likelihood of exiting poverty is lower for individuals in households with more children. While results from the poverty entry analysis suggests that individuals in metropolitan areas are less likely to enter poverty, we find no relationship between living in a metropolitan area and poverty exits. We find that the level of the state unemployment rate matters, although GDP does not significantly affect poverty exits. Facing a high unemployment rate decreases the likelihood of exiting poverty.

Poverty spell information also matters. Persons who have previously experienced a poverty spell are less likely to exit poverty than persons who are experiencing their first poverty

spell. And, persons with long poverty spells are less likely to exit poverty than persons with short poverty spells.

VI. Conclusion

This study examines events that trigger entries into and exits from poverty. Our analysis uses both descriptive statistics and discrete-time multivariate hazard models. The events examined are motivated by the conceptual model, and include changes in household composition, employment status, disability status, educational attainment, and economic conditions. Our multivariate approach disentangles the relationship between one event and poverty transitions from that of other events and demographic characteristics, thereby providing information about the relationship between specific events and individuals' entries into and exits from poverty. Several studies have examined the relationship between events and poverty transitions, but most use only descriptive analyses. While informative, descriptive analyses provide limited information because individuals can experience more than one event at a time, thereby making it impossible to disentangle the relationship between one event and a poverty transition from that of other events or demographic characteristics.

We examine poverty transitions using monthly data from the 1988, 1990, and 1996 panels of the Survey of Income and Program Participation (SIPP). Using these data, we examine whether the trigger events differ in the 1988-92 period—prior to welfare reform—and the 1997-99 period—after welfare reform.

Descriptive statistics suggest that those who shift from a two-adult household to a female-headed household and vice versa are the most likely to transition in and out of poverty, although individuals experiencing all of the examined trigger events are more likely to enter and exit poverty than those not experiencing the events. While the multivariate results confirm that many events affect the likelihood of entering and exiting poverty, a different event is identified as most important in poverty transitions. Individuals living in a household that experience a loss or gain of employment are the most likely to enter and exit poverty. Controlling for household characteristics and other variables reduces the observed relationship between household structure shifts and poverty, and employment changes emerge as being most strongly related to poverty entries. Our findings also suggest that many of the household, geographic, and economic characteristics are significantly related to poverty entries, as well as the poverty and non-poverty spell information.

A comparison of the 1988-92 (i.e., 1988/1990 SIPP panel) and 1996-99 (i.e., 1996 SIPP panel) time periods show both similarities and differences. One interesting difference is that changes in employment are more important in the recent 1996 to 1999 time period—after federal welfare reform and during a booming economy—than in the 1988 to 1992 time period—prior to welfare reform. In addition, shifts from two-adult to female-headed households and vice versa—

measured while controlling for shifts in employment—became less important in individuals' poverty transitions over this time period. A second set of models that exclude employment changes show a similar relationship between poverty transitions and household structure shifts in the 1988-92 and 1996-99 periods. One possible explanation for this pattern is that in the latter period changes in household structure are operating indirectly through employment to a greater extent than in the earlier period.

Overall our results suggest that many events throw people into poverty and many events help people exit from poverty. There appears to be no single path into or out of poverty. We find that household events—including changes in composition, employment, and disability status—are important, as well as economic conditions. These findings suggest that multiple policies can be considered to help alleviate poverty.

References

Allison, Paul D., *Event History Analysis.* A Sage University Paper. (Newbury Park: Sage Publications, 1984).

Bane, Mary Jo and David Ellwood, "Slipping Into and Out of Poverty: The Dynamics of Spells," *Journal of Human Resources*, Volume 21, No. 1, Winter, 1-23 (1986).

Becker, Gary, *A Treatise on The Family,* Chap. 5 (Cambridge and London: Harvard University Press, 1991).

Becker, Gary, *Human Capital.* 2nd Ed., Chap. 2 (New York: Columbia University Press, 1975).

Blank, Rebecca M., "Why Were Poverty Rates So High in the 1980s?" Jerome Levy Economics Institute Working Paper. (New York: Jerome Levy Economics Institute, 1991).

Burtless, Gary, Thomas Corbett, Katherine Porter, Wendell Primus, and Barbara Wolfe, "An Open Letter on Revising the Official Measure of Poverty," (2000). http://www.ssc.wisc.edu/irp/povmeas/povlet.htm

Citro, C.F. and R.T. Michael, *Measuring Poverty: A New Approach.* (Washington, DC: National Academy Press, 1995).

Dornbusch, Rudiger and Stanley Fischer, *Macroeconomics.* 5th Ed. (New York: McGraw-Hill, 1990).

Duncan, Greg J., *Years of Poverty, Years of Plenty.* (Ann Arbor: Institute for Social Research, The University of Michigan, 1984)

Duncan, Greg J. and Willard Rodgers, "Longitudinal Aspects of Childhood Poverty," *Journal of Marriage and the Family,* Vol. 50, Issue. 4, November, 1007-1022 (1988).

Eller, T. J., "Who Stays Poor? Who Doesn't?" Current Population Reports. Dynamics of Economic Well-Being: Poverty 1992-1993 (1996). http://www.census.gov/hhes/www/prevsipp.html

Gottschalk, Peter, Sara McLanahan, and Gary D. Sandefur, "The Dynamics of Intergenerational Transmission of Poverty and Welfare Participation" in *Confronting Poverty: Prescriptions for Change,* ed. Sheldon Danziger, Gary Sandefur, and Daniel Weinberg (Cambridge: Harvard University Press, 85-108, 1994).

Gottschalk, Peter and Sheldon Danziger, "Family Structure, Family Size, and Family Income: Accounting for Changes in the Economic Well-Being of Children, 1968-1986," in *Uneven Tides: Rising Inequality in America,* eds. Sheldon Danziger and Peter Gottschalk. (New York: Russell Sage Foundation, 1993).

Iceland, John, "The Dynamics of Poverty Spells and Issues of Left-Censoring," Research Report No. 97-378 (Population Studies Center, University of Michigan-Ann Arbor, 1997a).

Iceland, John, "Urban Labor Markets and Individual Transitions out of Poverty," *Demography*, Vol. 34, No. 3 August, 429-441 (1997b).

Lillard, Lee A. and Robert J. Willis, "Dynamic Aspects of Earning Mobility," *Econometrica* Vol. 46, 985-1012 (1978).

Naifeh, Mary, "Trap Door? Revolving Door? Or Both?" Current Population Reports. Dynamics of Economic Well-Being: Poverty 1993-1994 (1998). http://www.census.gov/hhes/www/poverty.html

Pavetti, Ladonna, "The Dynamics of Welfare and Work: Exploring the Process by Which Women Work Their Way Off Welfare" The Malcolm Weiner Center for Social Policy, The Kennedy School of Government, Harvard University, Dissertation Series #D-93-1, May (1993).

Rank, Mark and Thomas Hirschl, "Estimating the Proportion of Americans Ever Experiencing Poverty During their Elderly Years" *The Journals of Gerontology*, Vol. 54B, Issue 4, S184-194 (1999a).

Rank, Mark and Thomas Hirschl, "The Likelihood of Poverty across the American Adult Life Span," *Social Work*, Vol. 44, No. 3, May 201-216 (1999b).

Ravallion, Martin, "Issues in Measuring and Modelling Poverty" *The Economic Journal*, Vol 106, September 1328-1343 (1996).

Ruggles, Patricia, *Drawing the Line: Alternative Poverty Measures and Their Implications for Public Policy.* (Washington, DC: The Urban Institute Press, 1990).

Ruggles, Patricia and Robert Williams, "Transitions In and Out of Poverty: New Data from the Survey of Income and Program Participation," U.S. Department of Commerce, Bureau of the Census, No. 8716, December (1987).

Sawhill, Isabel V., "Poverty in the U.S.: Why Is It So Persistent?" *Journal of Economic Literature.* Vol. 26, September 1073-1119 (1988).

Schiller, Bradley *The Economics of Poverty and Discrimination.* 2nd ed. (Englewood Cliffs, NJ: Prentice-Hall, 1976).

Schiller, Bradley, "Who Are the Working Poor?" *The Public Interest*, Spring, 61-71 (1994).

Sen, Amartya, "Poverty: An Ordinal Approach to Measurement." *Econometrica* 44, no. 2, 219-231, March (1976).

Short, Kathleen, Thesia Garner, David Johnson, and Patricia Doyle, *Experimental Poverty Measures: 1990 to 1997.* P60-205, Current Population Report, Consumer Income. Washington, D.C.: U.S. Census Bureau (1999).

Stevens, Ann Huff, "Climbing out of Poverty, Falling Back In: Measuring the Persistence of Poverty over Multiple Spells," *Journal of Human Resources*, Summer (1999).

Stevens, Ann Huff, "The Dynamics of Poverty Spells: Updating Bane and Ellwood", *AEA Papers and Proceedings*, Volume 84, No. 2, May 1994, 34-37 (1994).

U.S. Census Bureau, *Historical Poverty Tables*, (2000). http://www.census.gov

U.S. Department of Commerce, Bureau of Economic Analysis, National Accounts Data. "Current-Dollar and 'Real' Gross Domestic Product." Accessed August 15 (2001). http://www.bea.doc.gov/bea/dn1.htm

U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics. "Table 4. Civilian labor force and unemployment by state and selected areas, not seasonally adjusted." Accessed August 15 (2001). http://stats.bls.gov/lauhome.htm?H4

Willis, Robert J., "Wage Determinants: A Survey and Reinterpretation of Human Capital Earnings Functions." Chapter 10 of the *Handbook of Labor Economics, Volume I*, Edited by O. Ashenfelter and R. Layard, Elsevier Science Publishers BV (1986).

Zick, Cathleen D. and Karen Holden, "An Assessment of the Wealth Holdings of Recent Widows," *Journal of Gerontology: Social Sciences.* Vol. 55B, No. 2, S290-S297 (2000).

Zick, Cathleen D. and Ken R. Smith, "Patterns of Economic Change Surrounding the Death of a Spouse," *Journal of Gerontology: Social Sciences.* Vol. 46, No. 6, S310-S320 (1991).

Table A.1: Summary of Empirical Poverty Transitions Literature

Study	Data	Years	Primary Sample Studied	Research Question(s) Addressed
Bane and Ellwood 1986	PSID	1970-1982	Persons Under Age 65	Exits, Events
Blank 1997	PSID	1979-1991	Total U.S.	Events
Duncan and Rodgers 1988	PSID	1968-1982	Children	Events
Eller 1996	SIPP	Oct. 1991-Apr. 1994	Total U.S.	Exits, Entries
Gottschalk and Danziger 1993	CPS	1968, 1986	Children	Events
Iceland 1997b	PSID	1970-1985	Adults Ages 18-64 in Metropolitan Areas	Exits, Events
Naifeh 1998	SIPP	Oct. 1992-Dec. 1995	Total U.S.	Entries, Exits
Rank and Hirschl 1999a	PSID	1968-1992	Adults Ages 60-90	Entries
Rank and Hirschl 1999b	PSID	1968-1992	Adults Ages 20-85	Entries
Ruggles 1990	CPS, SIPP	1984	Total U.S.	Entries
Ruggles and Williams 1987	SIPP	1983-1984	Total U.S.	Events
Stevens 1994	PSID	1970-1987	Total U.S.	Exits, Reentries
Stevens 1999	PSID	1967-1988	Total U.S.	Exits, Reentries
Zick and Smith 1991	PSID	1970-1984	Widows and Widowers	Events
Zick and Holden 2000	SIPP	Feb. 1990-Apr. 1995	Widows Ages 40+	Events

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